

Notice of Allowability

Application No.

10/779,546

Applicant(s)

GERSHENSON, MEIR

Examiner

Pritham Prabhakher

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 02/12/2004.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with James Shepherd on 04/04/2007.

1. On Page 16, *Claim 19* is numbered as being dependent upon claim 1 and is changed to being dependent upon claim 11.

2. On Page 9, in lines 6 and 7, the words "stright" and "straght" are changed to "straight".

Allowable Subject Matter

Claims 1-20 allowed.

The following is an examiner's statement of reasons for allowance:

*In regard to independent **Claim 1**, the prior art fails to teach or reasonably suggest, "A method of generating an image of a region in a turbid medium, comprising the steps of:*

illuminating a first plurality of locations along a first line in a turbid medium using beams of light;

focusing a camera having a field-of-view (FOV) such that said first plurality of locations reside within said FOV wherein a first image is generated;

illuminating a second plurality of locations along a second line in said turbid medium using beams of light, said second line being displaced relative to said first line;

focusing said camera such that said second plurality of locations reside within said FOV wherein a second image is generated;

illuminating a third plurality of locations along a third line in said turbid medium using beams of light, said third line being displaced relative to said first line and said second line with said second line being between said first line and said third line;

focusing said camera such that said third plurality of locations reside within said FOV wherein a third image is generated; and

subtracting, in terms of amplitude associated therewith, a portion of each of said first image and said third image from the entirety of said second image, wherein a resulting image is generated".

Regarding **Claims 2-10**, these claims are allowed as being dependent from allowed independent claim 1.

*In regard to independent **Claim 11**, the prior art fails to teach or reasonably suggest, "A method of generating an image of a region in a turbid medium, comprising the steps of:*

focusing a camera's field-of-view (FOV) at a region of a turbid medium;
illuminating a first plurality of locations along a first line in said region using beams of light;
activating said camera to generate a first image;
illuminating a second plurality of locations along a second line in said region using beams of light, said second line being adjacent to said first line;
activating said camera to generate a second image;
illuminating a third plurality of locations along a third line in said region using beams of light, said third line being adjacent to said second line wherein said second line is between said first line and said third line;
activating said camera to generate a third image; and
subtracting, in terms of amplitude associated therewith, a portion of each of said first image and said third image from the entirety of said second image, wherein a resulting image is generated".

Regarding **Claims 12-19**, these claims are allowed as being dependent from allowed independent claim 11.

*In regard to independent **Claim 20**, the prior art fails to teach or reasonably suggest, "A method of generating an image of a region in a turbid medium, comprising the steps of:*

focusing a camera's field-of-view (FOV) at a region of a turbid medium;
illuminating a first plurality of locations along a first line in said region using beams of light,
activating said camera to generate a first image;
illuminating a second plurality of locations along a second line in said region using beams of light, said second line being adjacent and parallel to said first line;
activating said camera to generate a second image;
illuminating a third plurality of locations along a third line in said region using beams of light, said third line being adjacent and parallel to said second line wherein said second line is between said first line and said third line;
activating said camera to generate a third image; and
subtracting, in terms of amplitude associated therewith, one-half of each of said first image and said third image from the entirety of said second image, wherein a resulting image is generated.

The following are the closest references found:

George (US Patent No.: 6459818B1) *discloses a system for recovering degraded images captured through atmospheric turbulence, or other atmospheric inhomogeneities, such as snow, rain, smoke, fog, or underwater fluctuations, is provided having an imager for capturing through such turbulence both a degraded image of a scene having at least one object, and an image of a point source associated with the object. The imager converts the degraded image into first image data signals representing the degraded image, and converts the image of the point source into second image data signals representing a point spread function. A computer of the system receives the first and second image data signals and produces third image data signals representing a recovered image of the object of the degraded image in accordance with the first and second image data signals. In another embodiment, the imager captures a degraded image through atmospheric turbulence of a scene having a known reference object and an unknown object, and converts the degraded image into first image data signals. After receiving the first image data signals, the computer identifies in the first image data signals such image data signals representing the reference object. The computer produces image data signals representing a recovered image of the degraded image in accordance with the first image data signals, the image data signals representing the reference in the first image data signals, and image data signals representing an un-degraded image of the reference. The computer may output the image data signals representing a recovered image to an output device to display or print the recovered image.*

Camus et al. (US Patent No.: 6088470) disclose a reliable method and apparatus for illuminating and imaging eyes uses multiple light sources producing multiple images of a subject each created under illumination by different illuminators. A composite image of the subject is formed by selecting pixels based upon their gray scale values or using pyramid image processing. A composite image can be created which is free of bright spots commonly caused by reflection of illumination from eyeglasses that may be worn by a subject or for which is free of dark shadows or which is free of both bright spots and dark shadows.

Stern (US Patent No.: 5532738) discloses a system for detecting the presence of an energy polarization altering dielectric material, such as ice or snow, on a surface, such as a part of an aircraft, which normally specularly reflects incident energy, such as light, when there is no such dielectric present. The energy is conveyed from a transmitter along a path to the surface and the incident energy is reflected from the surface along a path to a receiver with a dielectric on the surface destroying any polarization, such as circular, of the energy and that reflected from a specular portion maintaining the polarization. An optical system in one or both of the paths operates in an isolator state to produce an image of the dielectric portion having a first intensity level and that of the specular portion passing through the optical system having a different intensity level. When the optical system is operated alternately in isolator and non-isolator states it produces an image of the dielectric portion having a relatively steady intensity level and that of the specular portion alternating between first and

second different intensity levels corresponding to the isolator and non-isolator states of the optical system.

Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pritham Prabhakher whose telephone number is 571-270-1128. The examiner can normally be reached on M-F (7:30-5:00) Alt Friday's Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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